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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,369	10/09/2003	Taiichi Miya	MINB-02011/A-3049	6391

7590 05/17/2006

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EXAMINER	
ROMAN, LUIS ENRIQUE	
ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/681,369	MIYA ET AL.	
	Examiner	Art Unit	
	Luis Roman	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant amendment filed on 02/09/06 has been entered. Accordingly claims 4, 9, 10, 13 & 14 have been kept original, claims 1-3, 5-8, 11 & 12 have been amended and no claims have been cancelled. New claims 15 & 16 were added. It also included remarks/arguments.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 & 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dulin et al. (US 6118201) in view of Murakami et al. (JP 05021234 A) and Berger (US 5025201).

Regarding claim 1 Dulin et al. discloses a rotary transformer (Abstract & Fig. 1 element 20) type resolver having an inner core on which a rotary transformer output winding (Col. 1 lines 53-56 & Fig. 1 elements 52, 54) is wound and a resolver rotor on which resolver excitation windings are wound, a crossover lead (Col. 3 lines 27-32 & Fig. 1 element 70) that connects the rotary transformer output winding and the resolver excitation windings.

Dulin et al. does not disclose a disconnect protection structure comprising an insulating tube apparatus that covers the crossover lead and that has outermost ends secured to the crossover lead; and thermal expansion coefficient absorption means for absorbing a difference between thermal expansion coefficients of the crossover lead and the

insulating tube apparatus to thereby inhibit disconnection of the crossover lead from the rotary transformer output winding and the resolver excitation windings.

Murakami et al. teaches comprising a disconnect protection structure comprising an insulating tube apparatus that covers the crossover lead and that has outermost ends secured to the crossover leas (Fig. 1 elements 4).

Berger teaches a thermal expansion coefficient absorption means for absorbing a difference between thermal expansion coefficients of a tube covering a lead in a resolver excitation windings (Col.1 lines 40-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dulin et al. device with the teachings of Murakami et al. to provide a sleeve to cover the crossover lead to provide insulation and rigidez; which mechanically reinforces the moving parts of the rotary transformer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dulin et al. with the teachings of Berger to protect the crossover lead by covering it with an adequate thermal expansion coefficient material and as a result preventing irregular and inaccurate indications due to stresses by mechanically reinforcing the moving parts of the rotary transformer.

Regarding claim 2 Dulin et al. in view of Murakami et al. and Berger disclose the disconnect protection structure of claim 1.

Dulin et al. wherein the insulating tube apparatus is separated into a plurality of insulating tube units, and only a leftmost end of an outer left insulating tube unit and a rightmost end of an outer right insulating tube unit are respectively secured to the crossover lead.

Murakami et al. teaches wherein the insulating tube is separated into a plurality of insulating tube units (Fig. 1 elements 4), and wherein only a leftmost end of an outer left insulating tube unit and a rightmost end of an outer right insulating tube unit are respectively secured to the crossover lead (Fig. 3 element 15).

Berger teaches a thermal expansion coefficient absorption means for absorbing a difference between thermal expansion coefficients of a tube covering a lead in a resolver excitation windings (Col.1 lines 40-45).
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dulin et al. in view of Murakami et al. since the crossover may be bent in several parts as it is required that the tube cover the crossover from one end to the other for better mechanical reinforcement.
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dulin et al. with the teachings of Berger to protect the crossover lead by covering it with an adequate thermal expansion coefficient material and as a result preventing irregular and inaccurate indications due to stresses by mechanically reinforcing the moving parts of the rotary transformer.

Regarding claims 3 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 2.
Berger further teaches wherein the thermal expansion coefficient absorption means (Col. 1 lines 40-45) comprises adjacent ends of insulating tube units and a predetermined gap defined between the adjacent ends, the plurality of insulating tube units, the plurality of insulating tube units thereby being capable of expanding or contracting in response to temperature changes.

Regarding claim 4 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 2.
Berger does not teach wherein the thermal expansion coefficient absorption means comprises adjacent overlapping ends of the plurality of insulating tube units. However it is known in the art to join separate pieces to meet or satisfy length requirements. Said joining is known to provide overlapping ends.

Regarding claim 5 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 1.
Berger does not teach wherein the thermal expansion coefficient absorption means comprises at least one cutout portion formed on the insulating tube apparatus. However it is known in the art to facilitate bending of a sleeve match the shape or geometry of a component.

Regarding claim 6 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 5, wherein the insulating tube apparatus mentioned above could be bent to define an elbow, and the cutout portion could be located at the elbow.

Regarding claim 7 Dulin et al. in view of Murakami et al. and Berger discloses a disconnect protection structure for housing a rotary transformer (Dulin et al. - Abstract & Fig. 1 element 20) type resolver crossover lead (Dulin et al. - Col. 3 lines 27-32 & Fig. 1 element 70), comprising: an insulating tube apparatus that covers the crossover lead (Murakami et al. - Fig. 1 elements 4) and that has outermost ends secured to the crossover lead (Murakami et al. - Fig. 3 element 15), wherein the insulating tube apparatus is divided into a plurality of insulating tube units to enable the insulating tube units (Murakami et al. - Fig. 1 elements 4) to absorb a difference between thermal expansion coefficients of the crossover lead and the insulating tube apparatus and to thereby inhibit disconnection of the crossover lead (Berger - Col.1 lines 40-45).

Regarding claim 8 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 7.
Berger further teaches wherein adjacent ones of the plurality of insulating tube units are separated by a predetermined space to enable the plurality of insulating tube units to expand or contract in to temperature changes response to absorb the difference between the thermal expansion coefficients (Col. 1 lines 40-45) of the crossover lead

and the insulating tube apparatus and to thereby inhibit the disconnection of the crossover lead.

Regarding claim 9 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 7.
In the above mentioned tube, the adjacent ends of the plurality of insulating tube units overlap one another over a predetermined distance, the predetermined distance changing in response to shifting of the plurality of insulating tube units relative to one another due to temperature changes (Col. 1 lines 40-45 & same as claim 3) as all the materials will experience same change in dimensions due to a change in temperature.

Regarding claim 10 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 7.
In the above mentioned tube, a first one of the plurality of insulating tube units has a first diameter that defines a predetermined distance, and a second tapered diameter that is smaller than the first diameter, a second one of the plurality insulating tube units being set into the first one the plurality of tube units by a distance no greater than the predetermined distance to enable the plurality of insulating tube units to shift relative to one another response to temperature changes (Col. 1 lines 40-45 & same as claim 3) as all materials will experience same change in dimension due to a change in temperature.

Regarding claim 11 Dulin et al. in view of Murakami et al. and Berger discloses a disconnect protection structure for housing a rotary transformer (Dulin et al. - Abstract & Fig. 1 element 20) type resolver crossover lead (Dulin et al. - Col. 3 lines 27-32 & Fig. 1 element 70), comprising: a unitary insulating tube that covers the crossover lead (Murakami et al. - Fig. 1 elements 4) and that has outermost ends secured to the crossover lead (Murakami et al. - Fig. 3 element 15); and a disconnect stress absorbing cutout (It is known in the art that in order to change the physical characteristics or behavior of an insulating tube regarding the thermal expansion coefficient, they can be

varied in amount and their gap, shape, connected in different ways, having different type of cutouts to get the air contributing to the change of the thermal expansion coefficient) portion formed in the unitary insulating tube for absorbing a difference between thermal expansion coefficients of the crossover lead and the unitary insulting tube to thereby inhibit disconnection of the crossover lead (Berger - Col.1 lines 40-45).

Regarding claim 12 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 11.
Murakami et al. further wherein ends of the unitary insulating tube are respectively secured to the crossover lead (Fig. 3 element 15).

Regarding claim 13 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 11, wherein the unitary insulating tube is bent to define an elbow, and the disconnect stress absorbing cutout portion is located at the elbow. Please see above rejection of claims 5-6.

Regarding claim 14 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 11, further comprising least one additional disconnect stress absorbing cutout portion formed on the unitary insulating tube Please see above rejection of claims 5-6.

Regarding claim 15 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 2.
Murakami et al. further discloses where the insulating tube units are arranged in series in an end-to-end relationship.

Regarding claim 16 Dulin et al. in view of Murakami et al. and Berger discloses the disconnect protection structure of claim 7.
Murakami et al. further discloses where the insulating tube units are arranged in series in an end-to-end relationship.

Response to Arguments

Applicant's arguments filed on 02/09/06 have been fully considered but they are not persuasive. Below it is explained each and every argument presented by applicant.

Applicant argues: "Dulin et al. fails to disclose a disconnect protection structure"
As explained in the rejection of claim one Dulin et al. does not disclose disconnect protection structure. That's why it is was combined with the teachings of a lead protection disclosed by Murakami et al. and the teachings of Berger who teaches the use the concept of thermal expansion coefficient in sleeves to solve the problem of stress on the wires. All three teachings have a rotary transformer in common.

Applicant argues: "Murakami et al. fails to disclose outermost ends of the tube being secured to the crossover lead. In addition, the tubes 4 are not parts of an insulation tube; rather, they are apparently independent, parallel insulation tubes. Also, the leads 3 and tubes 4 are not part of a crossover of a rotary transformer type resolver".
Murakami et al. shows the lead wires being in parallel and separated from each other, this is just a schematic. It is intrinsically understood that the end wires of a coil (primary or secondary of a transformer) must be connected electrically to other devices in other to provide a functional usage.

Applicant argues: "Berger discloses an electrical resolver. However, Berger fails to disclose a crossover lead wire or an insulation tube apparatus. Therefore, Berger does

not relate to the claimed subject matter. Berger discussed thermal expansion only in the context of a mechanical hub".

The applicant is correct by saying that Berger et al. fails to disclose a crossover lead wire or an insulation tube apparatus. However Berger et al. teaches the concept of coefficient of thermal expansion in sleeves.

Applicant argues: "Murakami et al. fails to disclose thermal expansion coefficient absorption means" that correspond to the structure disclosed in the specification of the present application".

The applicant is correct by saying that Murakami et al. fails to disclose 'thermal expansion coefficient absorption means, this reference its being used with the purpose of showing the lead wires coming out of a coil bonded to the winding and in a sleeve.

Applicant argues: "Dulin et al. patent fails to show a disconnection protection structure, and Berger doesn't even show a crossover lead. Therefore, the Murakami et al. publication is apparently being relied upon to show the "thermal expansion coefficient absorption means." However, the Murakami et al. publication merely discloses tubes 4 bonded at one end to the core. Only one end of each tube 4 is bonded in the Figures of Murakami et al. The tubes 4 are independent and are not parts of "an insulating tube" as claimed. That is, the bonded ends of the tubes 4 are not "outermost ends."

Further, there is no structure for absorbing thermal expansion as claimed.

Therefore, the structure of Murakami et al. fails to correspond to any of the structures that are thermal expansion coefficient absorption means in the specification of this application"

Dulin et al. discloses a resolver with a rotary transformer, which does not disconnect protection structure, as the applicant correctly pointed out. That's why it is was combined with the teachings of a lead protection disclosed by Murakami et al. and the teachings of Berger who teaches the use the concept of thermal expansion coefficient in sleeves to solve the problem of stress on the wires. All three teachings have a rotary transformer in common.

Applicant argues: "Claim 1 further recites an insulating tube that covers the crossover lead and that has outermost ends secured to the crossover lead. The publication of Murakami et al. fails to disclose this feature. While one end of each of the tubes 4 is bonded to the ferrite core 1, there is nothing to indicate that the ends of the tubes are bonded to the crossover lead, as claimed. In Figure 5, the epoxy 25 appears to contact the wire 23; however, there is nothing to confirm that the wire 23 is actually bonded to the tube 24. In any event, even if the wire 23 is bonded to the tube 24 in Fig. 5 of Murakami et al. the tubes 24 are not parts of a single insulating tube apparatus, as claimed. Therefore, a combination of the Dulin et al. patent, the Murakami et al. reference and Berger fails to satisfy the terms of claim 1".
Murakami et al. shows the lead wires being in parallel and separated from each other, this is just a schematic. It is intrinsically understood that the end wires of a coil (primary or secondary of a transformer) must be connected electrically to other devices in other to provide a functional usage.

Applicant argues: "Although the Berger reference is applied to claim 1, there is no discussion of Berger as it applies to claim 1. The applicants respectfully request that the examiner explain what contribution Berger makes to the rejection of claim 1 if this rejection is repeated".
Berger et al. teaches the concept of coefficient of thermal expansion in sleeves.
Additionally a better explanation was provided in claims 1 and 2.

Applicant argues: "Regarding claim 2, the office action states that Murakami et al. discloses an insulating tube separated into a plurality of insulating tube units. However, the tubes 4 of Fig. 1 of Murakami are independent and not part of a single insulating tube.
Murakami et al. shows the lead wires being in parallel and separated from each other, this is just a schematic. It is intrinsically understood that the end wires of a coil (primary or secondary of a transformer) must be connected electrically to other devices in other to provide a functional usage.

Applicant argues: "In discussing some of the dependent claims, the office action relies on Col. 1, lines 40-45 of Berger to show thermal expansion coefficient absorption means. However, this part of Berger is describing mating surfaces of hubs and sleeves of resolvers. These are mechanical parts of the resolver and have nothing to do with a crossover lead or an insulating tube.
Berger fails to disclose a crossover or insulating tube of a crossover".
Applicant is correct by saying that Berger et al. fails to disclose a crossover or insulating tube of a crossover. However, Berger et al. teaches the concept of coefficient of thermal expansion in sleeves.

Applicant argues: "Claim 7 requires an insulating tube for a crossover lead to be divided into a plurality of tube units. As mentioned above, the tubes 4 of Murakami et al. are not part of the same insulating tube but are independent and parallel. Also, none of the Dulin patent, the Murakami et al. reference and Berger shows an insulating tube in which the outermost ends are secured to the crossover lead. Therefore, the terms of claim 7 and its dependents cannot be satisfied by a combination of the Dulin patent, the Murakami et al. reference and Berger".
Murakami et al. shows the lead wires being in parallel and separated from each other, this is just a schematic. It is intrinsically understood that the end wires of a coil (primary or secondary of a transformer) must be connected electrically to other devices in other to provide a functional usage.

Applicant argues: "Claim 11 requires a unitary insulating tube in which a cutout is formed. The office action cites Berger, Col. 1, lines 40-45 for the feature of a cutout. However, Berger fails to disclose a crossover or an insulation tube. Berger is discussing the mechanical hub of a resolver in the cited text, which is not similar to, related to or analogous to an insulation tube of a crossover lead".
Every claim is rejected based upon Dulin et al. in view of Murakami et al. and Berger combination. Murakami et al. teach the insulation tubes and Berger teaches the concept of coefficient of thermal expansion in sleeves

Applicant argues: "Also, in a manner similar to claims 1 and 7, claim 11 requires that outermost ends of the insulating tube be secured to the crossover lead. As discussed above, this feature is not shown or suggested in the cited references. Therefore, a combination of the Dulin patent, the Murakami et al. reference and Berger cannot satisfy the terms of claim 11 and its dependents".

Murakami et al. shows the lead wires being in parallel and separated from each other, this is just a schematic. It is intrinsically understood that the end wires of a coil (primary or secondary of a transformer) must be connected electrically to other devices in other to provide a functional usage.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luis E. Román whose telephone number is (571) 272 – 5527. The examiner can normally be reached on Mon – Fri from 7:15 AM to 3:45 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x 36. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from Patent Application Information Retrieval (PAIR) system.

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LR/050206

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